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THE ISLAND ECOSYSTEMS DATA BANK

Kent W. Bridges and G. Virginia Carey

Department of Botany
University of Hawaii
Honolulu, Hawaii 96822

ISLAND ECOSYSTEMS IRP

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ABSTRACT

The US/IBP Island Ecosystems IRP has made considerable use of computer processing for analyzing its data. As a result, many sets of machine readable records have been created. These include data, programs, and procedures for running the data with the programs. These items have been archived so that they may be used in the future. This report lists available items, describes the facilities used in processing the data, and discusses some of the aspects of operating a data bank.

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INTRODUCTION

The objectives of the data processing activities have centered on providing the support necessary to perform computer analyses of data collected by the US/IBP Island Ecosystems IRP. To accomplish this a very wide range of activities has been undertaken.

A brief description of the typical analysis procedure for hygrothermograph charts will serve as an example of the diversity of tasks involved in the Data Bank operations. Hygrothermograph chart records are manually read and the bi-hourly values are recorded on data sheets. These sheets are keypunched and the listings from these records are manually verified for accuracy. These data are then run through a program (designed and written by Data Bank personnel) to get daily and monthly mean and extreme values. The listings from this program are prepared for duplication. The monthly mean and extreme values are then entered into a general plotting program (also designed and written by Data Bank personnel) which plots the monthly values throughout the year. Other plots such as climate diagrams, are also constructed. Finally, the raw data and the plot-instruction data are archived on the Data Bank disk pack and a back-up tape is generated. It should be noted that the process of extracting raw data and verifying its transcription also frequently involves the time-consuming need to confirm the original recorded values.

After the analysis of particular data is completed, the data, the programs (unless they were commonly available elsewhere), and the procedures for running the programs with the data (unless they were routine), are stored in their machine-readable form as part of the Data Bank. There has been no attempt to collect data which are not also intended for analysis. In all, some 85,000 records have been added to the Data Bank and will be maintained for future use.

The purpose of this report is to give a brief overview of what items are in the Island Ecosystems Data Bank. The contents of all of the items are available as printed listings; a complete set of these listings is maintained in the Botany Department, University of Hawaii. The instructions for using the programs are either available in other reports or publications or are in the process of being prepared.

FACILITIES

The data processing activities have used the facilities of the University

of Hawaii Computing Center. At the end of 1974, the Computing Center underwent a change in computers from the IBM 360/65 to the IBM 370/158. Both systems use the OS MVT operating system and support the TSO and APL interactive terminal systems. The Project has leased a mountable disk pack for a 2314 disk drive. This disk pack is stored at the Computing Center. We expect to purchase this disk pack to store our data for future use.

The Project has leased a Datel 1030 terminal (similar to an IBM 2741) which uses the computer by a telephone-line connection through an accoustical coupler. A Hewlett-Packard flatbed plotter has been available for use with this terminal and a Cal Comp drum plotter has been used at the Computing Center. A shared keypunch was rented for the earlier portions of the project but its use was entirely superceded by the entry of data from the time-shared terminal.

The Data Bank has been staffed by one full-time programmer/data analyst, Virginia Carey, the part-time services of K. W. Bridges, and hourly data preparation by Sarah Wirawan. The early activities were performed by Sandra Yamashiro.

ACTIVITIES AND PROCEDURES

The Data Bank activities have been numerous. The activities associated with the analysis of the climate data, however, have dominated all of the others. The community analysis aspects of the Data Bank have also been a major activity.

Considerable effort was spent in creating a data processing environment which would have clearly defined procedures for performing even the most complex series of analyses and which would minimize the ad hoc treatment of each problem. Easy access to data, centralized data storage, and security from loss were also important goals. It was envisioned that eventually each Data Bank user would be able to access the data files (sometimes called data sets) and programs he needs and to carry out data set updating and analysis with no assistance from the Data Bank staff. In practice, however, it is almost always necessary for the staff to create appropriate procedures for each user and provide considerable assistance in their use. While the original goal is still considered desirable, the current facilities and our understanding of how to use them have not allowed us to achieve this goal. An attempt to provide such a "hands on" use of the computer for some small statistical analyses is

described by Bridges (1975).

The general operational philosophy of the Data Bank has been to build each data set and store it "on line." In this way the data set is available for use without any operator assistance in mounting tapes or disk packs. This has allowed us to test, and often do production runs, from the time-shared terminal. The data analysis programs have also been kept on line. When either data or programs are not in active use, or for security from loss, it has been necessary to move them to the Data Bank disk pack for archiving. Early in the Project, a series of programs were developed to do this. Recently, however, all archiving has been done with the Panvalet programs (available for lease or purchase from Pansophic Systems, Inc). The use of these programs has greatly simplified the archiving procedures.

The Data Bank is also archived for security on a magnetic tape. Two tapes are alternated in this procedure to guard against failure. These are the only tapes in use in the Data Bank. No tab cards are used as a storage medium.

CONTENTS OF THE DATA BANK

A listing of the current status of the Island Ecosystems Data Bank is given in Table 1. The entries are given in alphabetical order by the name of each item.

There are essentially three kinds of items stored in the Data Bank: data, programs, and job control language (JCL). Data are identified as either DATA or as OTHER. Programs are identified by either the programming language which has been used (FORTRAN or PL/1) or as an OBJECT module. This latter type is produced by compiling a program.

The status of the library and the activity report are given on the last page of the directory listing. See Table 2 for details.

A rough categorization by the general use of each item in the Data Bank is given in Table 3. It can be seen that the majority of the data in the Data Bank are either associated with the climate or community analysis activities. PL/1 was the programming language favored for all types of analyses. The sets of JCL are used almost exclusively for running the community analysis programs. These JCL sets often contain small amounts of data required to run the analyses according to some special constraints.

TABLE 1. Directory listing of the Island Ecosystems Data Bank. The explanation of the columns is given first, followed by the directory listing.

COLUMN TITLE	DESCRIPTION
NAME	A unique data set name consisting of up to 10 alphanumeric characters (A to Z and 0 to 9).
LVL	The current modification level number of the data set. This number is increased by one each time the data set is successfully updated (modified).
TYPE	Internal description or language type of the data set. The Island Ecosystems library contains the following types: FORT (fortran), PL/1, JCL (job control language), OBJCT (object), DATA, and OTHER (usually text).
STAT	Status describes the current use and activity of the data set. All of the Island Ecosystems data sets are in TEST, ACTIVE, and ENABLEd status.
ACCESSED	MM/DD/YY. The date of last access or reference to the data set.
STATEMENTS	Total number of statements or lines in the data set.
ACT	The action last performed on the data set since the last directory listing was printed. Actions are abbreviated as follows: ADD-ADDED, UPD-updated, REN-renamed, RES-restored, COM-comment.
COMMENT	A user-comment record containing up to 50 characters of user-defined information.

NAME	LVL	TYPE	STAT	ACCESSED	STATEMENTS	ACT		COMMENTS
ABBREV	1	PL/1	TAE	05/29/75	70		*	GENERATES SPECIES ABBREVIATIONS FROM NAMES
ADDRLAB1	1	DATA	TAE	07/23/75	227	COM	*	IBP PARTICIPANTS ADDRESS LABELS
ADDRLAB2	1	DATA	TAE	07/23/75	449	COM	*	LOCAL NON-IBP & OUT-OF-STATE ADDRESS LABELS
ALGAE	1	DATA	TAE	05/29/75	979		*	MSD(M.S.DOTY):ALGAE DATA
ALGAELS	2	PL/1	TAE	05/29/75	236		*	MSD:LISTS ALGAE DATA IN DETAIL
ALGAE1	2	PL/1	TAE	06/17/75	42		*	MSD:CHANGES ALGAE DATA TO ONE SPECIES PER RECORD
ALGAE2	1	PL/1	TAE	05/29/75	175		*	MSD:PRINTS TABLES OF ALGAE DATA BY SPECIES
ALGPUNCH	1	PL/1	TAE	05/29/75	171		*	MSD:REFORMAT AND PUNCH ALGAE DATA CARDS
ALGSPSS	1	JCL	TAE	06/16/75	32		*	DOTY: CNTL PGM FOR SPSS RUN ON ALGAE DATA
BERLYR1	2	DATA	TAE	06/17/75	929		*	RADOVSKY/TENORIO:BERLESE DATA FOR YEAR 1
BERLYR2	2	DATA	TAE	06/17/75	3,971		*	RADOVSKY/TENORIO:BERLESE DATA FOR YEAR 2
BIRDATA	1	DATA	TAE	05/29/75	1,219		*	SC(SHEILA CONANT):BIRD DATA
BIRDATA1	1	DATA	TAE	05/29/75	1,045		*	SC:BIRDATA SUBSET:1ST TWO SAMPLING PERIODS DELETED
BIRD1	1	PL/1	TAE	05/29/75	194		*	SC:RAW DATA REDUCER FOR BIRD DENSITY STUDIES
BORLST	1	PL/1	TAE	07/23/75	80	COM	*	GAS:PGM TO LIST CERAMBYCID DATA
CERAM	1	PL/1	TAE	05/29/75	142		*	ANALYZES CERAMBYCID DATA
CERAM1	1	DATA	TAE	05/29/75	525		*	GRESSITT/SAMUELSON CERAMBYCID DATA
CESKA1	2	FORT	TAE	05/29/75	789		*	RELEVE VERSION-IDENTIFIES SPECIES-RELEVE GROUPS
CESKA2	1	FORT	TAE	05/29/75	836		*	CONSTANCY VERSION
CHARTS	1	PL/1	TAE	07/11/75	113		*	PROG TO PRINT DESCRIPTIVE TABLE OF RAINFALL EVENTS
CHKLIST	1	PL/1	TAE	05/29/75	39		*	LISTS PLANT SPECIES, GROUPED BY FAMILIES
CHLMETCIR	1	DATA	TAE	07/03/75	239		*	CHL:METROSIDEROS CIRCUMFERENCES IN MM
CHLTRECIR	1	DATA	TAE	07/03/75	371		*	CHL:TREE CIRCUMFERENCES IN MM
COMPACT	1	PL/1	TAE	05/29/75	55		*	PACKS COMM DATA SO SEVERAL SP ARE ON ONE RECORD
CONVERT	1	PL/1	TAE	05/29/75	66		*	REFORMATS SP-PER-RECORD COMM DATA;CONV COVER A->N
DAYDEG	1	PL/1	TAE	05/29/75	125		*	CALC DEGREES * DAYS ABOVE VAR THRESH TEMP, HUTEMP
DEHREL1	1	DATA	TAE	05/29/75	169		*	HARDY RELEVE DATA, UNCOMPACTED
DEHREL2	1	DATA	TAE	05/29/75	30		*	DEHREL1 COMPACTED
DEHREL3	1	DATA	TAE	05/29/75	120		*	SELECT OUTPUT USING DEHREL2
DIET1	1	DATA	TAE	06/02/75	101		*	JOHN PORTER KILAUEA SMALL MAMMAL DIET DATA
DIET2	1	DATA	TAE	06/02/75	191		*	JOHN PORTER MAUNA LOA TR SMALL MAMMAL DIET DATA
DIET3	1	PL/1	TAE	06/02/75	130		*	JOHN PORTER SMALL MAMMAL DIET ANALYSIS PGM
DIET4	1	PL/1	TAE	06/02/75	140		*	JOHN PORTER SMALL MAMMAL DIET ANALYSIS PGM; VER 2
DMDCOMM1	1	JCL	TAE	06/02/75	121		*	DMD:COMMUNITY ANALYSIS JCL-38 RELEVES FROM DMDREL2
DMDCOMM2	1	JCL	TAE	06/02/75	124		*	DMD:COMMUNITY ANALYSIS JCL-DMDREL2 GRASS RELEVES
DMDCOMM3	1	JCL	TAE	06/02/75	123		*	DMD:COMMUNITY ANALYSIS JCL-DMDREL2 TREES-EXPANDED
DMDCOMM4	1	JCL	TAE	06/02/75	124		*	DMD:COMMUNITY ANAL JCL-DMDREL2 TREE,SHRUB,GRASS
DMDCOMM5	1	JCL	TAE	06/02/75	124		*	DMD:COMM ANAL JCL-DMDREL2 HIGHER ELEV-TRE,SHR,GRAS
DMDREL2	2	DATA	TAE	06/02/75	376		*	DMD:RELEVE DATA, COMPACTED
DMDREL3	1	DATA	TAE	06/02/75	340		*	DMD: SELECT OUTPUT FOR 42 RELEVES
DMD1REL2	1	DATA	TAE	07/23/75	376	COM	*	DMD:RELEVE COVER VALUES BRAUN-BLANQUET NUMERIC
DUNCAN	1	DATA	TAE	04/29/75	191		*	GO.SYSIN DATA FOR PROGRAM BMDO7V - S. CONANT
D281173	1	DATA	TAE	07/03/75	2,339		*	W. STEINER:DROSOPHILA SPECIES DATA

NAME	LVL	TYPE	STAT	ACCESSED	STATEMENTS	ACT	COMMENTS
ECTORATS	1	DATA	TAE	06/02/75	2,930		* RADOVSKY/TOMICH RODENT-ECTOPARASITES DATA,YRS 1&2
ECTOYRC1	2	DATA	TAE	06/02/75	1,390		* RADOVSKY/TOMICH RODENT-ECTOPARASITES DATA, YR 1
ECTOYRC2	2	DATA	TAE	06/02/75	1,540		* RADOVSKY/TOMICH RODENT-ECTOPARASITES DATA, YR 2
ELLEN	1	DATA	TAE	06/02/75	100		* COMM ANALYSIS TEST DATA: OUTPUT FROM SELECT,25 REL
EZPLOT	1	PL/1	TAE	06/02/75	510		* GENERAL PURPOSE INPUT STREAM DIRECTED PLOTTING PGM
E240474	1	DATA	TAE	07/03/75	1,523		* W. STEINER:DROSOPHILA SPECIES DATA
FJRCOMM1	1	JCL	TAE	06/16/75	121		* FJR/JAT:PITFALL YR 1 COMM ANALYSIS JCL
FJRCOMM2	1	JCL	TAE	06/16/75	121		* FJR/JAT: PITFALL YR2 COMM ANALYSIS JCL
FJRSPSS	1	JCL	TAE	06/16/75	64		* FJR:CNTL PGMS FOR SPSS RUNS-PITFALL,EERLESF DATA
FJR1REL1	1	DATA	TAE	06/16/75	2,497		* FJR:PITFALL COMM ANAL DATA- SORTED,NOT COMPACTED
FJR2REL1	1	DATA	TAE	06/16/75	702		* FJR:PITFALL Y2 COMM ANAL DATA-SORTED,NOT COMPACTED
FLPSP	2	DATA	TAE	06/02/75	798		* FLOWERING PLANT SPECIES IN HI VOLCANOES NAT PARK
FUNGI1	1	FORT	TAE	05/30/75	129		* PAUL DUNN SIMILARITY COEF PGM FOR FUNGI
FUNGI2	1	DATA	TAE	05/30/75	404		* PAUL DUNN FUNGI DATA
FUNGI3	2	FORT	TAE	05/30/75	837		* PAUL DUNN FUNGI ANALYSIS PGM REGROUP
FUNGI4	1	FORT	TAE	05/30/75	220		* PAUL DUNN FUNGI ANALYSIS PGM CONNEX
FUNGI5	1	FORT	TAE	05/30/75	78		* PAUL DUNN FUNGI ANALYSIS PGM STATION
GENEDAT2	1	DATA	TAE	05/30/75	8		* K. C. SUNG DATA FOR GENEPOO2
GENEPOO2	1	FORT	TAE	05/30/75	89		* SIM OF GENE FREQ WITH VAR POP SIZE, SELECT
G220	1	DATA	TAE	05/30/75	10		* M4200-RAW WEEKLY RAINFALL DATA- 711025 THRU 711227
G221	1	DATA	TAE	05/30/75	26		* M4200-RAW WEEKLY RAINFALL DATA- 720103 THRU 720626
G222	1	DATA	TAE	05/30/75	26		* M4200-RAW WEEKLY RAINFALL DATA- 720703 THRU 721225
G223	1	DATA	TAE	05/30/75	26		* M4200-RAW WEEKLY RAINFALL DATA- 730101 THRU 730625
G224	1	DATA	TAE	05/30/75	26		* M4200-RAW WEEKLY RAINFALL DATA- 730702 THRU 731224
G225	1	DATA	TAE	05/30/75	26		* M4200-RAW WEEKLY RAINFALL DATA- 731231 THRU 740624
G226	1	DATA	TAE	05/30/75	26		* M4200-RAW WEEKLY RAINFALL DATA- 740701 THRU 741223
G227	1	DATA	TAE	07/23/75	26	COM	* M4200-RAW WEEKLY RAINFALL DATA- 741230 THRU 750623
G230	1	DATA	TAE	05/30/75	9		* M5400-RAW WEEKLY RAINFALL DATA- 710104 THRU 710301
G231	1	DATA	TAE	05/30/75	17		* M5400-RAW WEEKLY RAINFALL DATA- 710308 THRU 710628
G232	1	DATA	TAE	05/30/75	26		* M5400-RAW WEEKLY RAINFALL DATA- 710705 THRU 711227
G233	1	DATA	TAE	05/30/75	26		* M5400-RAW WEEKLY RAINFALL DATA- 720103 THRU 720626
G234	1	DATA	TAE	05/30/75	26		* M5400-RAW WEEKLY RAINFALL DATA- 720703 THRU 721225
G235	1	DATA	TAE	05/30/75	26		* M5400-RAW WEEKLY RAINFALL DATA- 730101 THRU 730625
G236	1	DATA	TAE	05/30/75	26		* M5400-RAW WEEKLY RAINFALL DATA- 730702 THRU 731224
G237	1	DATA	TAE	05/30/75	26		* M5400-RAW WEEKLY RAINFALL DATA- 731231 THRU 740624
G238	1	DATA	TAE	05/30/75	26		* M5400-RAW WEEKLY RAINFALL DATA- 740701 THRU 741223
G239	1	DATA	TAE	07/23/75	26	COM	* M5400-RAW WEEKLY RAINFALL DATA- 741230 THRU 750623
G240	1	DATA	TAE	05/30/75	10		* M6600-RAW WEEKLY RAINFALL DATA- 711025 THRU 711227
G241	1	DATA	TAE	05/30/75	22		* M6600-RAW WEEKLY RAINFALL DATA- 720103 THRU 720529
G242	1	DATA	TAE	05/30/75	4		* M6600-RAW WEEKLY RAINFALL DATA- 720605 THRU 720626
G243	1	DATA	TAE	05/30/75	26		* M6600-RAW WEEKLY RAINFALL DATA- 720703 THRU 721225
G244	1	DATA	TAE	05/30/75	26		* M6600-RAW WEEKLY RAINFALL DATA- 730101 THRU 730625
G245	1	DATA	TAE	05/30/75	26		* M6600-RAW WEEKLY RAINFALL DATA- 730702 THRU 731224

NAME	LVL	TYPE	STAT	ACCESSED	STATEMENTS	ACT	COMMENTS
G246	1	DATA	TAE	05/30/75	24		* M6600-RAW WEEKLY RAINFALL DATA- 731231 THRU 740624
G247	1	DATA	TAE	05/30/75	23		* M6600-RAW WEEKLY RAINFALL DATA- 740701 THRU 741223
G248	1	DATA	TAE	07/23/75	26	COM	* M6600-RAW WEEKLY RAINFALL DATA- 741230 THRU 750623
G250	1	DATA	TAE	05/30/75	9		* K5400-RAW WEEKLY RAINFALL DATA- 710104 THRU 710301
G251	1	DATA	TAE	05/30/75	17		* K5400-RAW WEEKLY RAINFALL DATA- 710308 THRU 710628
G252	1	DATA	TAE	05/30/75	26		* K5400-RAW WEEKLY RAINFALL DATA- 710705 THRU 711227
G253	1	DATA	TAE	05/30/75	26		* K5400-RAW WEEKLY RAINFALL DATA- 720103 THRU 720626
G254	1	DATA	TAE	05/30/75	26		* K5400-RAW WEEKLY RAINFALL DATA- 720703 THRU 721225
G255	1	DATA	TAE	05/30/75	26		* K5400-RAW WEEKLY RAINFALL DATA- 730101 THRU 730625
G256	1	DATA	TAE	05/30/75	26		* K5400-RAW WEEKLY RAINFALL DATA- 730702 THRU 731224
G257	1	DATA	TAE	05/30/75	26		* K5400-RAW WEEKLY RAINFALL DATA- 731231 THRU 740624
G258	1	DATA	TAE	05/30/75	26		* K5400-RAW WEEKLY RAINFALL DATA- 740701 THRU 741223
G259	1	DATA	TAE	07/23/75	26	COM	* K5400-RAW WEEKLY RAINFALL DATA- 741230 THRU 750623
HEADLST	1	PL/1	TAE	05/30/75	175		* PROGRAM TO LIST DATA WITH A HEADER
HUTEMP	1	PL/1	TAE	07/11/75	336		* PROG PRINTS TEMP & HUMID TABLES:DAILY MEANS,RANGES
H001	1	DATA	TAE	05/30/75	13		* LISTING HEADER-RAW WEEKLY RAINFALL DATA
H002	1	DATA	TAE	05/30/75	15		* LISTING HEADER-RAW DAILY TEMP & HUMIDITY DATA
H005	1	DATA	TAE	05/30/75	12		* LISTING HEADER-STORAGE RAIN GAGE DATA
H007	1	DATA	TAE	05/30/75	13		* LISTING HEADER-STEINER'S DROSOPHILIA DATA
H008	1	DATA	TAE	05/30/75	11		* LISTING HEADER-PORTER'S RODENT STOMACH DATA
H009	1	DATA	TAE	05/30/75	8		* LISTING HEADER-CESKA DATA-TRIESTE FORMAT
H010	1	DATA	TAE	05/30/75	5		* LISTING HEADER-CONANT'S BIRD DATA
H011	1	DATA	TAE	05/30/75	5		* LISTING HEADER-RAW SOLAR RADIATION DATA
H012	1	DATA	TAE	06/16/75	12		* LISTING HEADER-FJR/JAT PITFALL (CR BERLESE) DATA
ICFILE	1	DATA	TAE	07/23/75	450	COM	* NAME,ADDRESS,TELEPHONE-IBP INFO FOR PGM IDENT
JAT1REL1	1	DATA	TAE	06/16/75	883		* FJR:BERLESE Y1 COMM ANAL DATA-SORTED,NOT COMPACTED
JAT2REL1	1	DATA	TAE	06/16/75	3,850		* FJR:BERLESE Y2 COMM ANAL DATA-SORTED,NOT COMPACTED
KFRYR1	1	DATA	TAE	06/03/75	552		* TOMICH/RADOVSKY RODENT-ECTOPARASITE DATA, KFR,YR 1
KFRYR2	1	DATA	TAE	06/03/75	528		* TOMICH/RADOVSKY RODENT-ECTOPARASITE DATA, KFR,YR 2
LCREL2	1	DATA	TAE	06/02/75	95		* LINDA CUDDIHY THESIS DATA: HVNP RELEVES
LCREL3	1	DATA	TAE	06/02/75	89		* LINDA CUDDIHY: CESKA INPUT FORM
LEEP01	1	DATA	TAE	06/02/75	111		* JOHN LEEPER: PLOT3D DATA FOR TERMINAL GROWTH
LEEP02	1	DATA	TAE	06/02/75	102		* JOHN LEEPER: PLOT3D DATA FOR ADULTS
LEEP03	1	DATA	TAE	06/02/75	90		* JOHN LEEPER: PLOT3D DATA FOR SMALL NYMPHS
LEEP04	1	DATA	TAE	06/02/75	92		* JOHN LEEPER: PLOT3D DATA FOR EGGS
LEEP05	1	DATA	TAE	06/02/75	76		* JOHN LEEPER: PLOT3D DATA FOR LARGE NYMPHS
LOGRAIN	1	DATA	TAE	06/02/75	97		* PLOT3D DATA FOR MONTHLY LOG RAIN ON TRANSECT
MFSREL2	1	DATA	TAE	06/02/75	26		* STONER: FUNGI RELEVE DATA
MFSREL3	1	DATA	TAE	06/02/75	61		* STONER: MFSREL2 IN FORM FOR CESKA & SIMILAR
MSDCOMM1	1	JCL	TAE	06/16/75	121		* DOTY:COMMUNITY ANALYSIS JCL
MSDREL	1	PL/1	TAE	06/16/75	45		* REFORMATS ALGAE DATA FOR COMM ANAL-OUTPUT MSDREL1
MSDREL1	1	DATA	TAE	06/16/75	1,563		* DOTY:COMM ANALYSIS DATA- SORTED, NOT COMPACTED
M270474	1	DATA	TAE	07/03/75	1,705		* W. STEINER:DROSOPHILA SPECIES DATA

NAME	LVL	TYPE	STAT	ACCESSED	STATEMENTS	ACT	COMMENTS
M280474	1	DATA	TAE	07/03/75	1,796		* W. STEINER:DROSOPHILA SPECIES DATA
NAMES	2	DATA	TAE	06/03/75	191		* DMD:FILE OF SP NAMES & ABBREV, USED BY ABBREV PGM
PAIKA1	1	DATA	TAE	06/02/75	42		* PAIK: PLOT3D DATA FOR D. IMMIGRANS
PAIKA2	1	DATA	TAE	06/02/75	42		* PAIK: PLOT3D DATA FOR D. SIMULANS
PAIKPLT	1	DATA	TAE	06/02/75	405		* PAIK: MISC EZPLOT RECORDS FOR ABUNDANCE PLOTS,ETC
PAIKREL2	1	DATA	TAE	06/02/75	16		* PAIK: DROSOPHILA RELEVE DATA
PAIKREL3	1	DATA	TAE	06/02/75	40		* PAIK: PAIKREL2 IN FORM FOR CESKA & SIMILAR
PAIKSPD	1	DATA	TAE	06/02/75	42		* PAIK: SPECIES DIVERSITY DATA
PANJCL	1	JCL	TAE	06/02/75	55		* PANVALET PROCS FOR PANUN, PANOFF, CATLIST, PANDUMP
PITFYR1	1	DATA	TAE	06/17/75	2,501		* RADOVSKY/TENORIO PITFALL DATA, YR 1
PITFYR2	1	DATA	TAE	06/17/75	702		* RADOVSKY/TENORIO PITFALL DATA, YR 2
PLANRAIN72	1	DATA	TAE	06/02/75	31		* EZPLOT DATA: ANNUAL RAIN 1972 - BY ELEVATION
PLKOADIKF	1	DATA	TAE	07/23/75	86	COM	* SPATZ/DMD:EZPLOT DATA-KILAUEA FOREST KOA DIAMETER
PLKOADIKP	1	DATA	TAE	07/23/75	77	COM	* SPATZ/DMD:EZPLOT DATA-KIPUKA PUAULU KOA DIAMETER
PLK54CLDI	2	DATA	TAE	06/02/75	456		* EZPLOT DATA: K54, CLIMATE DIAGRAMS - 1972,73,74
PLK54CURA	2	DATA	TAE	06/02/75	224		* EZPLOT DATA: K54, CUMULATIVE RAIN - 1972,73,74
PLK54HUM	2	DATA	TAE	06/02/75	300		* EZPLOT DATA: K54, HUMIDITY - 1972,73,74
PLK54SDF	2	DATA	TAE	06/02/75	292		* EZPLOT DATA: K54, SATURATION DEFICIT - 1972,73,74
PLK54TEM	2	DATA	TAE	06/02/75	298		* EZPLOT DATA: K54, TEMPERATURE - 1972,73,74
PLK54WKRA	2	DATA	TAE	06/02/75	701		* EZPLOT DATA: K54, WEEKLY RAIN - 1972,73,74
PLM42CLDI	2	DATA	TAE	06/02/75	459		* EZPLOT DATA: M42, CLIMATE DIAGRAMS - 1972,73,74
PLM42CURA	2	DATA	TAE	06/02/75	220		* EZPLOT DATA: M42, CUMULATIVE RAIN - 1972,73,74
PLM42HUM	2	DATA	TAE	06/02/75	268		* EZPLOT DATA: M42, HUMIDITY - 1972,73,74
PLM42SDF	2	DATA	TAE	06/02/75	260		* EZPLOT DATA: M42, SATURATION DEFICIT - 1972,73,74
PLM42TEM	2	DATA	TAE	06/02/75	266		* EZPLOT DATA: M42, TEMPERATURE - 1972,73,74
PLM42WKRA	2	DATA	TAE	06/02/75	580		* EZPLOT DATA: M42, WEEKLY RAIN - 1972,73,74
PLM54CLDI	2	DATA	TAE	06/02/75	456		* EZPLOT DATA: M54, CLIMATE DIAGRAMS - 1972,73,74
PLM54CURA	2	DATA	TAE	06/02/75	220		* EZPLOT DATA: M54, CUMULATIVE RAIN - 1972,73,74
PLM54HUM	2	DATA	TAE	06/02/75	294		* EZPLOT DATA: M54, HUMIDITY - 1972,73,74
PLM54SDF	2	DATA	TAE	06/02/75	292		* EZPLOT DATA: M54, SATURATION DEFICIT - 1972,73,74
PLM54TEM	2	DATA	TAE	06/02/75	298		* EZPLOT DATA: M54, TEMPERATURE - 1972,73,74
PLM54WKRA	2	DATA	TAE	06/02/75	705		* EZPLOT DATA: M54, WEEKLY RAIN - 1972,73,74
PLM66CLDI	2	DATA	TAE	06/02/75	459		* EZPLOT DATA: M66, CLIMATE DIAGRAMS - 1972,73,74
PLM66CURA	2	DATA	TAE	06/02/75	220		* EZPLOT DATA: M66, CUMULATIVE RAIN - 1972,73,74
PLM66HUM	2	DATA	TAE	06/02/75	268		* EZPLOT DATA: M66, HUMIDITY - 1972,73,74
PLM66SDF	2	DATA	TAE	06/02/75	260		* EZPLOT DATA: M66, SATURATION DEFICIT - 1972,73,74
PLM66TEM	2	DATA	TAE	06/02/75	266		* EZPLOT DATA: M66, TEMPERATURE - 1972,73,74
PLM66WKRA	2	DATA	TAE	06/02/75	565		* EZPLOT DATA: M66, WEEKLY RAIN - 1972,73,74
PLOT3D	1	OBJCT	TAE	06/02/75	1,528		* TAYLOR 3-D PLOTS
PLQURAEL72	1	DATA	TAE	06/02/75	29		* EZPLOT DATA: QUARTERLY RAIN 1972 - BY ELEVATION
PLQURAQU72	1	DATA	TAE	06/02/75	41		* EZPLOT DATA: QUARTERLY RAIN 1972 - BY QUARTER
PL7273CD	1	DATA	TAE	06/02/75	902		* EZPLOT DATA: 1972-73 CLIMATE DIAGRAM
PORTER1	1	DATA	TAE	06/02/75	87		* JOHN PORTER SMALL MAMMAL STOMACH DATA

NAME	LVL	TYPE	STAT	ACCESSED	STATEMENTS	ACT		COMMENTS
RADEZ1	1	DATA	TAE	06/03/75	163		*	EZPLOT DATA: SOLAR RADIATION IN HVNP
RAGAK5472	1	DATA	TAE	07/23/75	90	COM	*	K54 RAIN EVENTS DATA FOR 1972
RAGAK5473	1	DATA	TAE	07/23/75	95	COM	*	K54 RAIN EVENTS DATA FOR 1973
RAGAK5474	1	DATA	TAE	07/23/75	106	REN	*	K54 RAIN EVENTS DATA FOR 1974
RAGAM5472	1	DATA	TAE	07/23/75	80	COM	*	M54 RAIN EVENTS DATA FOR 1972
RAGAM5473	1	DATA	TAE	07/23/75	65	COM	*	M54 RAIN EVENTS DATA FOR 1973
RAGAM5474	1	DATA	TAE	07/23/75	88	REN	*	M54 RAIN EVENTS DATA FOR 1974
RAGAPL74	1	DATA	TAE	06/03/75	282		*	EZPLOT DATA: RAIN EVENTS PLOTS, 1974
RAIN	1	PL/1	TAE	06/03/75	130		*	PROCESS WEEKLY RAIN GAUGE RECORDS FOR GAUGE RANK
RAINCON	1	DATA	TAE	06/03/75	215		*	CONTOUR DATA FOR WEEKLY RAINFALL ON TRANSECT
RAIN1	1	PL/1	TAE	07/11/75	115		*	PROCESS WEEKLY RAIN GAUGE RECORDS
REBBIBL	1	OTHER	TAE	06/30/75	1,337		*	BECKER:UNFORMATTED PHD BIBLIOGRAPHY TEXT
REBCOMM1	1	JCL	TAE	06/27/75	125		*	BECKER:COMMUNITY ANALYSIS JCL
REBGLOSS	1	OTHER	TAE	06/30/75	740		*	BECKER:UNFORMATTED (FERN) GLOSSARY TEXT
REBPLSP	1	DATA	TAE	06/27/75	1,472		*	BECKER:MONTANE RAIN FOREST RELEVE DATA
REBTRFR	1	DATA	TAE	06/27/75	2,429		*	BECKER:RAW TREE FERN DATA
REDUCE	1	PL/1	TAE	06/17/75	36		*	REFORMATS BERLESE & PITFALL DATA FOR COMM ANALYSIS
RELSEL	1	PL/1	TAE	06/03/75	484		*	INTERACTIVE RELEVE SELECTION AND CESKA+SIMILAR OUT
RELSEL3	1	PL/1	TAE	06/03/75	395		*	BATCH VERSION OF RELSEL
SATDEF	1	PL/1	TAE	06/03/75	428		*	SATURATION DEFICIT FROM TEMP & HUMIDITY HUTEMP
SCCOMM1	1	JCL	TAE	06/03/75	123		*	SC:COMMUNITY ANALYSIS JCL- USES SCREL2 BIRD DATA
SCCOMM2	1	JCL	TAE	07/23/75	123	COM	*	SC:COMMUNITY ANALYSIS JCL-USES SCREL1 BIRD DATA
SCCOMM3	1	JCL	TAE	07/23/75	126	COM	*	SC:COMMUNITY ANALYSIS JCL-USES SCREL1 BIRD DATA
SCIAR3D	1	DATA	TAE	06/03/75	467		*	STEFFAN: SCIARID DATA FOR PLOT3D
SCREL1	2	DATA	TAE	07/23/75	146	UPD	*	SC:BIRD DATA FOR COMMUNITY ANALYSIS, NOT COMPACTED
SEARCH	2	PL/1	TAE	06/03/75	74		*	CHANGE SPECIES NUMBER TO SPECIES NAME
SEASON1	1	DATA	TAE	06/03/75	177		*	CONTOUR DATA - HOUR OF DAY VS MONTH - TEMP M42,73
SIMILAR	1	PL/1	TAE	06/03/75	310		*	SIMILARITY MATRIX PROGRAM; USES RELSEL OUTPUT
SOLAR1	1	PL/1	TAE	06/03/75	126		*	RAW DATA FROM YSI RECORDER TO LANGLEYS
SOLAR2	1	DATA	TAE	06/03/75	277		*	RAW DATA FROM YSI RECORDER FOR HVNP
SPATZKOADI	1	DATA	TAE	07/03/75	964		*	SPATZ:KOA DIAMETER DATA
SPATZKOAHT	2	DATA	TAE	07/23/75	1,836	UPD	*	SPATZ:KOA HEIGHT DATA
SPATZKOA1	1	DATA	TAE	07/03/75	108		*	SPATZ:KOA DATA-KILAUEA & KIPUKA PUAULU
SPATZKOA2	1	DATA	TAE	07/03/75	250		*	SPATZ:KOA DATA-KILAUEA & KIPUKA PUAULU
SPDIV	2	PL/1	TAE	06/03/75	229		*	SPECIES DIVERSITY CALCULATIONS; MOD FROM DESERT B.
SPFERNS	1	DATA	TAE	06/03/75	465		*	FERNS IN HAWAII VOLCANOES NATIONAL PARK
SPNAMES	1	PL/1	TAE	06/03/75	109		*	RELEVE LISTING PROGRAM; ONE RELEVE PER PAGE
SPREL	1	PL/1	TAE	06/03/75	53		*	COMPACT DMD RELEVE DATA
SUMSML	1	PL/1	TAE	06/03/75	347		*	RADOVSKY TRAP RESULTS PROGRAM, SIMILAR TO SUMSTS
SUMSTS	1	PL/1	TAE	06/03/75	316		*	RADOVSKY TRAP RESULTS PROGRAM, SIMILAR TO SUMSML
TABLE	1	DATA	TAE	06/03/75	191		*	CONVERSION DATA FROM SP NUMBER TO NAME FOR DMD
TABLES	1	PL/1	TAE	06/03/75	127		*	SIMPLE TABLE FORMATTING PROGRAM
TEMP3D1	1	DATA	TAE	06/03/75	70		*	CONTOUR DATA FOR MEAN TEMPERATURE

NAME	LVL	TYPE	STAT	ACCESSED	STATEMENTS	ACT	COMMENTS
TH01KE4	2	DATA	TAE	06/02/75	1,522	*	RAW TEMPERATURE & HUMIDITY DATA, K54
TH02ME4	1	DATA	TAE	06/02/75	273	*	RAW TEMPERATURE & HUMIDITY DATA, M54
TH03ME4	2	DATA	TAE	06/02/75	1,371	*	RAW TEMPERATURE & HUMIDITY DATA, M54
TH04ME6	2	DATA	TAE	06/02/75	1,280	*	RAW TEMPERATURE & HUMIDITY DATA, M66
TH05M42	2	DATA	TAE	06/02/75	1,280	*	RAW TEMPERATURE & HUMIDITY DATA, M42
TH09WAU	1	DATA	TAE	06/02/75	363	*	RAW TEMPERATURE & HUMIDITY DATA, WAU
TH10KAD	1	DATA	TAE	06/02/75	670	*	RAW TEMPERATURE & HUMIDITY DATA, KAINDI
TOMCODE	1	DATA	TAE	06/03/75	442	*	TOMICH DATA FOR RODENTS WITH CODE MARKING,KFR,Y1&2
TOMLIST	2	PL/1	TAE	06/10/75	67	*	LIST TOMICH DATA WITH HEADER
TOMSPSS	1	JCL	TAE	06/17/75	323	*	TOMICH:SPSS RUNS ON RODENT DATA,MLT & KFR YRS 1&2
WASCOMM1	1	JCL	TAE	06/17/75	121	*	WAS:COMMUNITY ANALYSIS JCL
WASREL1	1	DATA	TAE	06/17/75	137	*	WAS:COMM ANALYSIS DATA- SORTED, NOT COMPACTED
WCURVE	1	PL/1	TAE	06/03/75	247	*	WHITTAKE CURVES PLOT GENERATOR - EZPLOT OUTPUT

TABLE 2. Library status and activity report. This is the last page of the directory listing. The upper half of the report shows the library storage originally "ALLOCATED," the storage currently "IN USE," and the amount of storage still "AVAILABLE." In the lower half of the report is the "DATE OF LAST DUMP." This is the most recent date on which a back-up of the library was taken. This back-up is a tape file which contains a copy of all stored data sets. Such a back-up tape is periodically generated. In the event of accidental destruction of the library on the disk, the library file can be quickly and easily recovered by restoring from the latest back-up protection file. This ensures only minimal losses.

UNIVERSITY OF HAWAII. MGMT. SYS. OFFICE — VER 8.0 — 07/23/75 16.26.58 — PAGE 7 — SERIAL 004421

IBP.PANLIB

++PRINT 2-UP.COMMENT

F A N V A L E T L I B R A R Y S T A T U S A N D A C T I V I T Y R E P O R T NO. 27

	BLKS /TRK	BLOCK SIZE	TOTAL BLOCKS	OVER HEAD	UNAVAIL BLOCKS	DATA BLOCKS	DATA SETS	TOTAL STATEMENTS
ALLOCATED	3	2,298	1,800	18		1,782	608	
IN USE						1,382	228	85,512
AVAILABLE						400	380	

	SINCE LAST CREATION	SINCE LAST DIRECTORY	DATE OF LAST DUMP
OPENED	186	6	07/03/75
CLOSED	166	6	

TABLE 3. General uses for the different types of items stored in the Data Bank.

GENERAL CATEGORY	TYPE	GENERAL USE				TOTAL
		CLIMATE	COMMUNITY ANALYSIS	UTILITY	SPECIAL PURPOSE	
DATA	DATA	89	49		27	165
	OTHER				2	2
PROGRAMS	FORT		6		1	7
	PL/1	7	10	3	16	36
	OBJCT			1		1
JCL	JCL		16		1	17
TOTALS		96	81	4	47	228

DISCUSSION

The operation of a general data-bank facility can be a complicated process. Several of the things we learned through experience greatly aided us in our work. It is worth briefly describing these here.

The heart of the Data Bank is the library of programs, data sets, and job control procedures. The maintenance of this library is very important to the smooth operation of the Data Bank. Maintenance involves the indexing of the items in the library and their efficient updating and retrieval. The library should then be a compact, centralized storage facility.

The previous example of the directory listing for the Island Ecosystems Data Bank (Table 1) shows that the index to the library can give a good summary report of what is available in the library and its current status, including what version it is and when it was last used. What has not been discussed is the ease with which each of these items (or parts of items) may be retrieved and used.

The use of an item in the Island Ecosystems Data Bank requires that it be retrieved and then sent to the computer for processing. A series of procedures have been established to do this; in no case is it necessary to have the item repunched as a deck of cards. Transfer to the computer is by means of data sets which are stored on the computing system disks. Output of the library items may be made as listings or magnetic tape copies. Card decks may also be punched for distribution purposes. The entire library may be transferred to a magnetic tape for back-up security from loss. The date that this was last done is shown in Table 2.

It is important to adopt a set of library maintenance programs which are both easy and inexpensive to use. We have used the Panvalet programs to maintain the Island Ecosystems Data Bank and feel that their capability meets our needs. These programs are expensive to purchase or lease (Panvalet sells for more than $3,000). Fortunately, these are often available to users at a large computer facility. At the University of Hawaii, the Management Systems Office provides the programs. The alternative to using such programs is either to become buried under a mountain of tab cards or to have racks of magnetic tapes. Neither of these alternatives, however, gives adequate security from loss. We started our active conversion from tab cards to the disk library with back-up tapes the week after a fire occurred on the floor above the computing

center. It is better to not wait for such a motivating event to occur. A potential disadvantage of the Panvalet programs, although it did not affect us, is the need for a large space on a disk pack. Moreover, you are required to use 80-column records.

One of the most time-consuming activities of the Data Bank operation has been the detailed checking and cross-checking required to get transcription errors out of sets of data. We were not able to find very many short cuts to simplify solving this problem. We did rely, as often as possible, on the cross-checking done by the originator of the data set. Often the individual who has collected the data has a feel for what constitutes an obvious error. In other cases, however, someone who is not familiar with the data can spot the errors, but for other reasons. To facilitate this process, we developed a simple listing program which allows a multi-line header to be put at the top of each page, gaps to be created between selected columns, and the date and time to be automatically included as part of the header. For many data sets, this is a valuable way to help the data checking procedure.

One of the everpresent data processing needs is for statistical analyses. Often, with the sorts of studies we have been analyzing, this consists of complex data tabulations and simple descriptive statistics. We have found the use of a well-documented and well-tested series of programs, such as SPSS (Nie et al. 1975) to be adequate for most of our needs. There would have to be a very strong reason for any new statistical analysis program to be written.

Data analysis programs other than those commonly thought of as statistical programs, were heavily used in our activities. We were fortunate in being able to use some computer programs developed by other groups. However, a large effort is generally necessary to get these programs fully operational. For this reason it is important to get the programs as soon as possible and to test them on some typical data before the actual data are put into a machine readable format. Reformatting data is often a difficult and time-consuming job.

A direct-access file system based on a complex multi-key access arrangement was designed for the Data Bank during the early stages of the data collection activities (Mi, Yamashiro, and Mueller-Dombois 1972). This system, however, has not been implemented. While there has been a considerable effort to integrate the data collection, few problems have arisen which have required the simultaneous analysis of different sets of data. As a result, the implementation

and testing of such a system is being indefinitely postponed.

We have only just begun to investigate the operation of a data bank. We have some ideas on the efficient handling of some kinds of data, and we have had experience in providing some types of data processing for these data. What we have not done is to address the problem of how a data bank facility can best serve the short- and long-term needs of the scientific community.

For the short-run use of the data bank, we need to investigate more fully whether or not our procedures are optimal for data entry and analysis. For example, the problems of delays in the analysis of data were all too common; we would like to have avoided these delays. In many cases, special purpose programs were developed which should have been covered by more general programs. Even very general processing problems were not adequately handled by good programs. In some cases, we tried to fill general needs by developing general capability software. Unfortunately, however, there is currently no adequate mechanism for the dissemination of such programs to the other data bank organizations.

In the longer term, we have little idea how valuable the stored data will be to future users. We have had little inter-investigator use of data with the exception of items such as the climate data. The use of these data, however, has come from the technical reports which provide summaries at several levels of reduction. The off-line disk storage which we have adopted as the long-term storage medium is not expensive, however, so that even if the data are not often used, their maintenance will be inexpensive.

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